EXPLANATION OF DATA TABLES FOR NAVARIN BASIN ASSESSMENT PROVINCE

RESULTS

LOG-N PARAMS (PORE) Key mathematic parameters that describe log-normal probability distributions for volume of hydrocarbon-bearing rock, in acre-feet, for each play as reported in the **PORE** module of **GRASP**.

mu Natural logarithm of F50 value of log-normal distribution for volume of hydrocarbon-bearing rock, or "μ", for the subject play. **mu** = ln F50. [Note: distribution **mean** = $e^{(mu + 0.5[sig.\ sq.])}$.]

sig. sq. The variance of the log-normal distribution for volume of hydrocarbon-bearing rock, or "σ^2", for the subject play. **sig. sq.** = $\{\ln [0.5((F50/F16)+(F84/F50))]\}^2$.

N (MPRO) Number of hydrocarbon pools calculated for the plays by the **MPRO** module of **GRASP** from inputs for probability distributions of prospect numbers and geologic chances of success (approximately the product of play and prospect chances of success) . The maximum (**Max**) number of pools for each play was entered into the **MONTE1** module of **GRASP** to fix the number of pools aggregated to calculate play resources.

Reserves Sums of recoverable oil and gas volumes for pools within the play, including both proven and inferred reserve categories. A "prop" entry indicates that the reserve data are proprietary.

BCF Billions of cubic feet of gas, recoverable, at standard (surface) conditions (here fixed at a temperature of 60° Fahrenheit or 520° Rankine, and 14.73 psi atmospheric pressure).

MMB Millions of barrels of oil, recoverable, at standard (surface) conditions.

Undiscovered Potential Risked, undiscovered, conventionally recoverable oil and gas resources of the play, here reported at **Means** of probability distributions.

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Mean Pool Sizes of Ranks 1 to 3 Unrisked (or conditional) mean volumes of recoverable oil and gas in the three largest pools in the play.

PLAY INPUT DATA

F100.....F00 Fractiles for values within probability distributions entered to **GRASP** for calculations of play resources. Four-point distributions (F100, F50, F02, F00) generally indicate that calculations were conducted using log-normal mathematics. Eight-point distributions generally indicate that calculations were conducted using Monte Carlo mathematics. Choice of mathematic approach was in most cases the option of the assessor.

Prospect Area Maximum area of prospect closure, or area within spill contour, in acres. Probability distributions for prospect areas were generally based on distributions assembled independently for each play from large numbers of prospects mapped with seismic reflection data.

Trap Fill Trap fill fraction, or fraction of prospect area in which the reservoir is predicted to be saturated by hydrocarbons.

Pool Area Areal extent of hydrocarbon-saturated part of prospect, in acres. Calculated using **PRASS**, or **SAMPLER** module of **GRASP**, to integrate input probability distributions for prospect areas and trap fill fractions.

Pay Thickness Thickness of hydrocarbon-productive part of reservoir within pool areas, in feet. Probability distributions for prospect areas, trap fill fractions, and pay thicknesses are integrated in the **PORE** module of **GRASP**, to calculate a probability distribution for volume of hydrocarbon-bearing rock, in feet, within the play as reported above under **LOG-N PARAMS (PORE)** .

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Oil Yield (Recov. B/Acre-Feet) Oil, in barrels at standard (surface) conditions, recoverable from a volume of one acre-foot of oil-saturated reservoir in the subsurface. Oil yield probability distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, oil saturations, oil shrinkage factors (or "Formation Volume Factors"), and oil recovery efficiencies.

Gas Yield (MMCF/Ac.-Ft.) Gas, in millions of cubic feet at standard (surface) conditions, recoverable from a volume of one acre-foot of gas-saturated reservoir in the subsurface. Distributions were generally calculated in a separate exercise using **PRASS** to integrate input probability distributions for porosities, gas saturations, reservoir pressures, reservoir temperatures (in degrees Rankine), gas deviation ("Z") factors, combustible fractions (that exclude noncombustibles such as carbon dioxide, nitrogen, etc.), and gas recovery efficiencies.

Solution Gas-Oil Ratio (CF/B) Quantity of gas dissolved in oil in the reservoir that separates from the oil when brought to standard (surface) conditions, in cubic feet recovered per barrel of produced oil.

Gas Cond. (B/MMCF) Quantity of liquids or condensate dissolved in gas in the reservoir that separates from the gas when brought to standard (surface) conditions, in barrels recovered per million cubic feet of produced gas.

Number of Prospects..... Probability distributions for numbers of prospects in plays, generally ranging from minimum values (F99) representing the numbers of mapped prospects, to maximum values (F00) that include speculative estimates for the numbers of additional prospects that remain unidentified (generally stratigraphic prospects, geophysically indefinite prospects, or prospects expected in areas with no seismic coverage).

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Probabilities for Oil, Gas, or Mixed Pools

Oil (OPROB) Fraction of hydrocarbon pools that consist entirely of oil, with no free gas present. Typically, an undersaturated oil pool.

Gas (GPROB) Fraction of hydrocarbon pools consisting entirely of gas, with no free oil present.

Mixed (MXPROB) Fraction of hydrocarbon pools that contain both oil and gas as free phases, the gas usually present as a gas cap overlying the oil.

Fraction of Net Pay to Oil (OFRAC) When a hydrocarbon pool is modeled as a mixed case, with both oil and gas present, the fraction of pool volume that is saturated by oil in the subsurface.

Play Chance Success Probability that the play contains at least one pool of technically-recoverable hydrocarbons (that would flow into a conventional wellbore in a flow test or during production).

Prospect Chance Success The fraction of prospects within the play that are predicted to contain hydrocarbon pools, given the condition that at least one pool of technically-recoverable hydrocarbons occurs within the play.

Play Type (E-F-C) Play classification scheme.

- **E** **Established** play, in which significant numbers of fields have been discovered, providing the assessor with data for pool size distributions and reservoirs sufficient to allow the assessor to model the play with confidence.
- **F** **Frontier** play, where exploration activities are at an early stage. Some wells have already been drilled to test the play concept but no commercial fields have been established.

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C	**Conceptual** play, hypothesized by analysts based on the subsurface geologic knowledge of the area. Such plays remain hypothetical and the play concept has not been tested.

NAVARIN BASIN

				Log-N Params.							
				PORE		N (MPRO)		Reserves		Undiscovered Potentia	
Play				Ac/Ft	Ac/Ft	No. Pools		Gas	Oil	Gas	Oil
No.	Area	UAI Code	Name	mu	sig. sq.	Mean	Max	(BCF)	(MMB)	(BCF)	(MMB)
1	Navarin Basin	UANA0100	Miocene Transgressive Shelf Sands	11.21	2.64	11.9	44	-	-	666	78
2	Navarin Basin	UANA0200	Regressive Shelf Sands	11.41	2.52	32.2	81	-	-	2432	272
3	Navarin Basin	UANA0300	Oligocene Tectonic Sands	11.38	1.30	6.7	32	-	-	196	20
4	Navarin Basin	UANA0400	Turbidite and Submarine Fan Sands	12.19	2.01	18.1	56	-	-	2518	116
5	Navarin Basin	UANA0500	Eocene Transgressive Shelf Sands	11.95	1.81	4.6	24	-	-	336	11

		MEAN POOL SIZES OF RANKS 1 TO 3						INPUT DATA					
		Pool #1		Pool #2		Pool #3							
PLAY		Gas	Oil	Gas	Oil	Gas	Oil	Prospect Area (Acres)					
No.	Name	(BCF)	(MMB)	(BCF)	(MMB)	(BCF)	(MMB)	F100	F95	F75	F50	F25	F05
1	Miocene Transgressive Shelf Sands	553	24	131	41	85	24	18	381	1600	4350	11800	49700
2	Regressive Shelf Sands	1261	55	355	84	250	55	15	276	1090	2850	7410	29400
3	Oligocene Tectonic Sands	146	6	45	10	33	7	118	878	2250	4320	8310	21300
4	Turbidite and Submarine Fan Sands	1224	44	503	19	308	23	45	497	1530	3360	7370	22800
5	Eocene Transgressive Shelf Sands	285	10	105	4	66	2	45	540	1740	3910	8790	28200

		INPUT DATA											
PLAY		Prospect Area (Acres)			Trap Fill (Dec. Frac.)								
No.	Name	F02	F01	F00	F100	F95	F75	F50	F25	F05	F02	F01	F00
1	Miocene Transgressive Shelf Sands	91100	136400	1072600	.10	.17	.21	.24	.30	.37	.40	.41	.50
2	Regressive Shelf Sands	52400	77200	556200	.10	.18	.22	.26	.32	.40	.48	.50	.60
3	Oligocene Tectonic Sands	31600	41200	158700	.20	.32	.41	.50	.58	.71	.78	.85	1.00
4	Turbidite and Submarine Fan Sands	36600	50300	253900	.10	.21	.30	.38	.48	.63	.76	.81	1.00
5	Eocene Transgressive Shelf Sands	46100	64000	341300	.30	.44	.52	.60	.69	.80	.88	.92	1.00

NAVARIN BASIN

PLAY		INPUT DATA													
		Pool Area (Acres)									Pay Thickness (Feet)				
No.	Name	F100	F95	F75	F50	F25	F05	F02	F01	F00	F100	F95	F75	F50	F25
1	Miocene Transgressive Shelf Sands	3	86	396	1150	3340	15500	29500	45400	409300	16	34	50	64	83
2	Regressive Shelf Sands	3	68	295	821	2280	9950	18500	28000	231500	19	51	80	110	151
3	Oligocene Tectonic Sands	45	392	1080	2190	4440	12300	18800	25000	107600	8	19	28	40	54
4	Turbidite and Submarine Fan Sands	11	159	553	1320	3130	10900	18400	26100	156300	16	56	100	150	224
5	Eocene Transgressive Shelf Sands	26	305	1010	2410	5830	19400	34200	49300	243700	16	34	50	64	83

PLAY		INPUT DATA															
		Pay Thickness (Feet)				Oil Yield (Recov. B/Acre-Foot)								Gas Yield (MMCF/Ac.-Ft)			
No.	Name	F05	F02	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	Miocene Transgressive Shelf Sands	120	140	155	264	8	27	48	72	108	194	292	677	.018	.064	.116	.175
2	Regressive Shelf Sands	239	290	330	636	11	31	51	72	101	166	234	476	.036	.104	.169	.238
3	Oligocene Tectonic Sands	83	100	113	210	4	15	28	43	66	122	189	458	.014	.052	.098	.150
4	Turbidite and Submarine Fan Sands	400	510	600	1378	3	11	20	31	48	92	144	362	.008	.043	.096	.167
5	Eocene Transgressive Shelf Sands	120	140	155	264	3	9	16	22	32	54	79	167	.015	.052	.095	.143

PLAY		INPUT DATA															
		Gas Yield (MMCF/Ac.-Ft)				Solution Gas Oil Ratio (CF/B)								Gas Cond. (B/MMCF)			
No.	Name	F25	F05	F01	F00	F100	F95	F75	F50	F25	F05	F01	F00	F100	F95	F75	F50
1	Miocene Transgressive Shelf Sands	.265	.481	.730	1.713	170	260	300	320	380	430	500	550	19	30	38	41
2	Regressive Shelf Sands	.334	.545	.769	1.554	170	300	380	420	500	630	740	900	19	30	38	41
3	Oligocene Tectonic Sands	.232	.433	.671	1.642	150	290	360	410	500	630	740	900	19	30	38	41
4	Turbidite and Submarine Fan Sands	.291	.646	1.130	3.545	390	600	730	820	950	1250	1300	1400	15	26	31	38
5	Eocene Transgressive Shelf Sands	.216	.392	.594	1.393	150	360	490	600	750	1000	1200	1500	13	25	29	32

NAVARIN BASIN

		INPUT DATA											
PLAY		Gas Cond. (B/MMCF)				Number of Prospects in Play							
No.	Name	F25	F05	F01	F00	F99	F95	F75	F50	F25	F05	F01	F00
1	Miocene Transgressive Shelf Sands	50	60	79	80	97	102	110	115	120	126	134	135
2	Regressive Shelf Sands	50	60	79	80	167	170	175	180	185	195	199	200
3	Oligocene Tectonic Sands	50	60	79	80	122	130	140	145	150	158	161	162
4	Turbidite and Submarine Fan Sands	40	50	58	70	109	112	130	140	150	170	178	180
5	Eocene Transgressive Shelf Sands	39	48	51	60	137	140	145	150	155	160	168	170

		INPUT DATA						
		Probabilities for Oil, Gas, or Mixed Pools			Fraction of Net	Play	Prospect	
PLAY		Oil	Gas	Mixed	Pay to Oil	Chance	Chance	Play Type
No.	Name	(OPROB)	(GPROB)	(MXPROB)	(OFRAC)	Success	Success	E - F - C
1	Miocene Transgressive Shelf Sands	0	.4	.6	0.4	.56	.18	C
2	Regressive Shelf Sands	0	.4	.6	0.4	.64	.28	C
3	Oligocene Tectonic Sands	0	.4	.6	0.4	.51	.09	C
4	Turbidite and Submarine Fan Sands	0	.5	.5	0.2	.65	.20	C
5	Eocene Transgressive Shelf Sands	0	.75	.25	0.1	.56	.05	C